AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for rapid refrigeration at a useful temperature T_U which employs a thermochemical system based on the coupling of reversible physico-chemical phenomena between a gas and a solid or liquid sorbent,

said phenomena being exothermic in one direction and endothermic in the other direction, called the LT phenomenon and the HT phenomenon,

said phenomena being such that, at a given pressure, the equilibrium temperature of the LT phenomenon is below the equilibrium temperature of the HT phenomenon,

said method comprising ~~consisting in~~ carrying out at least one cycle consisting of a refrigeration step and a regeneration step starting from an initial state in which a reactor in which the LT phenomenon occurs and a reactor in which the HT phenomenon occurs are at the ambient temperature and isolated from each other,

the refrigeration step consisting of the endothermic phase of the LT phenomenon, which releases a refrigerant fluid G in gas form,

the regeneration step consisting of the endothermic phase of the HT phenomenon, which releases the fluid G in gas form,

wherein in said method ~~being characterized in that~~ :

- the LT phenomenon is a liquid/gas phase change of the fluid G or an absorption of the fluid G by a liquid sorbent;
- the HT phenomenon is a sorption of the fluid G by a liquid or solid sorbent;
- the endothermic phase of the LT phenomenon takes place in a reactor thermally isolated from the ambient environment; and
- the exothermic phase of the LT phenomenon takes place in a condenser in permanent communication with the reactor in which the HT phenomenon takes place, the condensed fluid G then being transferred into the reactor in which the endothermic phase of the LT phenomenon takes place.

2. (Currently Amended) The method as claimed in claim 1, ~~characterized in that~~ wherein:

- the refrigeration step comprises:
- a phase A1 during which the reactor in which the HT phenomenon takes place ~~(hereinafter denoted by HT reactor)~~ and the reactor in which the LT phenomenon takes place ~~(denoted hereafter by LT reactor)~~ are placed in communication with each other; and
- a phase A2 during which the HT and LT reactors are isolated from each other and the HT reactor is heated; and
- the regeneration step comprises:
- a phase C during which the HT reactor is heated and in permanent communication with a condenser;
- a phase D consisting in transferring the fluid G in liquid form from the condenser to the LT reactor; and
- a phase E consisting in cooling the HT reactor in order to return it to the initial conditions.

3. (Currently Amended) The method as claimed in claim 2, implemented for ice production, ~~characterized in that~~ wherein it comprises, between passive refrigeration phase A2 and phase C of the regeneration step, an intermediate phase B for separating the pieces of ice from the support.

4. (Currently Amended) The method as claimed in claim 3, ~~characterized in that~~ wherein phase B consists in bringing the condenser into communication with the LT reactor for a short period so as to bring some of the hot gas released by the endothermic step of the HT reactor into proximity with the support on which the pieces of ice form.

5. (Currently Amended) The method as claimed in claim 3, ~~characterized in that~~ wherein phase B is implemented using electrical resistance elements integrated into or

attached to the wall of the LT reactor, or in the reactor BT, near the ice support.

6. (Currently Amended) The method as claimed in claim 2, ~~characterized in that~~ wherein, during step A1, the heat generated by the exothermic step in the HT reactor is extracted.

7. (Currently Amended) The method as claimed in claim 2, ~~characterized in that~~ wherein step D is carried out during execution of step C.

8. (Currently Amended) The method as claimed in claim 1, ~~characterized in that~~ wherein the reactor in which the HT phenomenon takes place and the condenser are permanently in communication with each other.

9. (Currently Amended) A device for implementing the method as claimed in ~~one of claims 1 to 8, characterized in that~~ claim 1, wherein the device comprises:

- ~~it comprises two reactors (1) and (2)~~ a first reactor and a second reactor and a condenser ~~(4)~~ provided with means ~~(8)~~ for extracting the heat;
- the second reactor ~~(2)~~ is connected to the condenser ~~(4)~~ via a second line ~~(10)~~ provided with a valve ~~(5)~~;
- the condenser ~~(4)~~ is connected to the first reactor reactor ~~(1)~~ via a first line ~~(9)~~;
- the first reactor ~~(1)~~ is provided with heating means ~~(6)~~ and with means ~~(7)~~ for extracting the heat, and it contains a liquid or solid sorbent capable of reversibly sorbing a refrigerant fluid G; and
- the second reactor ~~(2)~~ includes means ~~(11)~~ for thermally isolating it from the ambient medium, and it contains the liquid form of the refrigerant fluid G or a liquid sorbent capable of absorbing the refrigerant fluid G.

10. (Currently Amended) The device as claimed in claim 9, ~~characterized in that~~ wherein it further includes a third line ~~(12)~~ provided with a valve ~~(13)~~ that connects the first reactor ~~(1)~~ directly to the second reactor ~~(2)~~.

11. (Currently Amended) The device as claimed in ~~either of claims 9 and 10,~~

~~characterized in that~~ claim 9, wherein the second reactor ~~(2)~~ is an evaporator.

12. (Currently Amended) The device as claimed in ~~one of claims 9 to 11, characterized in that~~ claim 9, wherein the second reactor ~~(2)~~ is an evaporator provided with an ice tray ~~(3)~~.

13. (Currently Amended) The device as claimed in claim 12, ~~characterized in that~~ wherein the ice tray forms an integral part of the evaporator.

14. (Currently Amended) The device as claimed in claim 12, ~~characterized in that~~ wherein the ice tray is fixed to or placed on a wall of the evaporator that is in contact with the boiling refrigerant fluid, directly or via fins.

15. (Currently Amended) The device as claimed in claim 13, ~~characterized in that~~ wherein the evaporator is formed by two hollow sections that have different concavities and are joined together along their longitudinal edges, the section having the smaller concavity being placed above the section having the larger concavity, the respective concave parts being upwardly directed, the section having the smaller concavity forming the ice tray and the section having the larger concavity forming the reservoir for the refrigerant fluid.

16. (Currently Amended) The device as claimed in claim 15, ~~characterized in that~~ wherein the concavities are formed by portions of circular or elliptical arcs of different diameters, the sections being portions of longitudinally truncated tubes of cylindrical or elliptical cross-section.

17. (Currently Amended) The device as claimed in claim 15, ~~characterized in that~~ wherein the sections are in contact with each other along their lower generatrices.

18. (Currently Amended) The device as claimed in ~~one of claims 12 to 17, characterized in that~~ claim 12, wherein the ice tray is divided into compartments by partitions.

19. (Currently Amended) The device as claimed in claim 18, ~~characterized in that~~ wherein the partitions are hollow and contain a phase change material.

20. (Currently Amended) The device as claimed in claim 15, ~~characterized in that~~ wherein the lower section is provided with cells filled with a phase change material.

21. (Currently Amended) The device as claimed in claim 18, ~~characterized in that~~ wherein the partitions include notches.

22. (Currently Amended) The device as claimed in claim 15, ~~characterized in that~~ wherein fins are placed in the space between the two sections.

23. (Currently Amended) The device as claimed in claim 22, ~~characterized in that~~ wherein the fins are hollow and contain a phase change material.

24. (Currently Amended) The device as claimed in claim 14, ~~characterized in that~~ wherein:

- the ice tray is formed by a container ~~(100)~~;
- said container is provided with a thermal insulation ~~(109)~~ placed around its periphery;
- said container is removable and fits onto the lower part of the evaporator ~~(102)~~, which also includes a thermal insulator ~~(108)~~;
- the evaporator ~~(102)~~ is provided with external fins ~~(101)~~ that are immersed in the ice tray and with internal fins ~~(103)~~; and
- the evaporator is provided with a pipe ~~(104)~~ for connecting it to the rest of the device.